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The Relationship between Oral Health Literacy with Failed Appointments and DMFT in Adults Attending Orthodontic Clinic of Birjand

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Abstract

Background: Oral health literacy (OHL) is one of the most important determinants of oral health. A missed appointment has many potential implications for oral health and treatment outcomes. Given the importance of the topic in community oral health programming, the purpose of this study was to examine the association between oral health literacy, missed appointments, and DMFT in adults attending the orthodontic clinic of Birjand.
Methods: This cross-sectional study was conducted on 172 adults who were randomly referred to Birjand orthodontic clinic. Health literacy was assessed using the questionnaire OHL-AQ. In addition, missed appointments were reviewed over a one-year period. DMF index was also calculated using the patient's first panoramic radiograph. The data were analyzed using SPSS software version 18. A significant level ($p = 0.05$) was considered.
Results: This study was conducted on 172 patients referred to the orthodontic clinic, with a mean age of 24,64.9 years, a minimum age of 18 and a maximum age of 42 years. The oral health literacy of the participants was 12.23.2 There was no significant association between oral health literacy and gender, missed appointments, and DMFT index ($P > 0.05$), but education was an effective factor for the level of oral health literacy ($P < 0.002$).
Conclusion: The study found adequate OHL, which could be due to a high level of education. However, health policy makers should devise programs to promote oral health in the community. Oral health literacy was not influenced by gender, absenteeism and DMFT, but education was a factor that influenced the level of oral health literacy.

Keywords: Oral health literacy, Failed appointments, DMFT

1. Introduction

Health literacy is a key component of the pursuit of health and well-being in modern society. Health literacy encompasses a range of skills in reading, listening, analyzing, decision making, and the ability to apply these skills in health situations not necessarily related to years of study or general literacy (1). The World Health Organization (WHO) has defined health literacy as a cognitive and social skill that determines an individual's motivation and ability to access, understand, and use information in ways that maintain and promote health. It has considered health literacy not only as an individual trait but also as a key determinant of health at the population level (2).

Health literacy is key to empowering people and in turn serves as a tool for addressing health inequities and improving the knowledge and skills of community members. Its importance to public health is such that some researchers consider it a stronger predictor of health than age, income, employment status, education level, and race (3). Oral health literacy is a subset of health literacy.

Following health literacy, the most common definition of oral health literacy is the degree to which individuals are able to acquire, process, and understand general oral health information

and make appropriate oral health maintenance decisions (4). One way to reduce oral health disparities and improve the quality of dental care is to improve oral health literacy. Moreover, nowadays, due to the rapid development of information technology with a large amount of complex health information, it is challenging for illiterate people to obtain appropriate health information (5).

There are many factors responsible for the persistence of oral diseases in the society. They can be divided into two categories: external factors such as financial problems and lack of access to services, and internal factors such as personality traits and caring behaviors.

One of the most important and influential internal factors for oral diseases in the society is the level of oral health literacy of individuals. Oral health literacy not only affects oral health but can also influence quality of life (6).

Dentists believe that oral health can be improved in the population by changing conditions, behaviors, environments, and the organization of services (7).

Studies show that low oral health literacy in the population prevents people from using preventive or curative services provided by service providers or the information provided by health organizations.

People often go to the dentist when work has lost its preventive aspect and there is no other way than treatment.

Failure to see the dentist on time or failure to attend dental appointments for prophylaxis services is rooted in the cultural, economic, social, and psychological problems of the individual (8).

Failure to attend dental appointments has many potential implications for oral health and treatment outcomes. The percentage of patients who do not show up for treatment is alarming. In many cases, multiple appointments are required for dental treatment, and the success of treatment depends on the patient's continuous attendance (9).

To plan and design oral health programs, it is important to know and consider the current status of oral health literacy, behaviors, and personal habits related to oral health in the community. Research on oral health literacy assessment is currently in its infancy. In particular, there is little knowledge about oral health literacy in developing countries, including Iran. Therefore, there is still a need for further research to obtain comprehensive information in this area (10).

Due to the insufficient studies conducted in Iran and the cultural and social differences in different cities of Iran, as well as the importance of oral health literacy in planning, educating and promoting oral health in the community, health literacy surveillance and mapping is an important component of health policy in Iran.

Among the various dental treatments, orthodontic treatments require multiple follow-ups and thus appropriate cooperation from the patient. One aspect of this cooperation is an appropriate level of health literacy. Therefore, the aim of this study was to investigate the relationship between oral health literacy and the number of unattended appointments and DMFT in patients referred to Birjand orthodontic clinic.

2. Methods

This cross-sectional study, conducted in 1395, included a total of 172 orthodontic patients of the Birjand dental school orthodontic clinic who had been under treatment for at least one year and had complete treatment records. The samples were selected by simple random sampling. The health literacy questionnaire, number of missing orthodontic appointments, and DMF were recorded for each patient as follows. Since the average duration of orthodontic treatment is 24-28 months, more than 2 to 3 missing sessions, which is 10%, may be significant and indicate that the patient is not attending regular visits. Therefore, 10% was chosen as the cut-off point for categorizing the patient's missing appointments.

In the study of Haghdoost et al (11), the standard questionnaire (IHLQ) (Iranian Health Literacy Questionnaire) was used and its reliability and validity were confirmed by Cronbach's alpha, Likert scaling and Bartlett's test.

This questionnaire contains 17 oral health literacy questions in four sections: reading comprehension, numerical comprehension, listening comprehension, and decision making, three questions on oral health behaviors, one question on sources of obtaining oral health information, and one question on self-assessment of oral health status, and questions on demographic factors such as age, gender, and education.

The reading comprehension section assessed reading skills and oral health knowledge, which included six cloze questions on oral health literacy. Numeracy Comprehension Section,

Assessed reading, writing, and counting skills. This section consisted of four questions, of which the patient had to answer two

questions on each section after reading a prescription on the use of antibiotics and instructions for a mouth rinse.

The Listening Comprehension section, which assessed listening, reading, writing, and counting skills, included two questions. In this section, the questioner twice read instructions to the patient to follow after the tooth extraction, and the patient was asked to answer the questions after hearing these instructions.

The decision-making section assessed reading, comprehension, and decision-making skills. It included three questions on the management of oral problems and two questions on the implications of the patient's case. The scoring method was such that a score of one was given for correct answers, "I do not know" for incorrect answers, and zero for questions not answered. Depending on the number of questions, the questionnaire score ranged from 0-17 and individuals were classified into three groups based on the score obtained: inadequate health literacy {0-9}, borderline {10-11} and adequate health literacy {12-17}.

Absence from treatment sessions was also assessed over a one-year period by reviewing patient records in which missed appointments were noted.

Patients' baseline photographs prior to orthodontic treatment were used to assess DMF. After data collection, the data were analyzed using SPSS software version 18 and statistical analysis was performed using Kruskal-Wallis's test. The significance level (p = 0.05) was considered.

3. Results

This study was conducted on 172 patients referred to the orthodontic clinic, with a mean age of 24.6 ± 4.9 years, a minimum age of 18, and a maximum age of 42. Most of the subjects were female (80.2%), 69.2% had higher education and 45.3% were students.

The mean oral health score was 12 3.2 and DMFT index was 7.76 3.6 and the missed appointment rate was 9.8 8.6%.

Using the data in the table below, no significant difference was found between the mean score of oral health literacy and DMFT index as a function of the number of missed appointments (P > 0.05) (Table 1).

Table 1. The relationship between missed orthodontic appointments with OHL score and DMFT

	No missed appointmnents (43 patients)	Less than 10% of appointments missed (57 patients)	10% or more appointments missed (72 patients)	P value*
Oral health literacy score (mean ± SD)	11.9 ±3.6	12.6± 2.6	11.6± 3.3	0.16
DMFT (mean + SD)	8.69± 4.1	7.1± 3.1	7.75± 3.6	0.08
*kruskal-wallis test				

Based on the data in the table below, no significant difference was found between the average number of decayed teeth and the number of filled teeth in terms of the number of appointments not attended during the treatment period. However, the mean number of missing teeth showed a significant difference in relation to the number of unattended appointments (P = 0.014). and Kruskal-Wallis test showed that the mean number of missing teeth was significantly higher in subjects who were absent for more than 10% of the sessions than in subjects who were not absent (p = 0.032) and was significantly higher in subjects with more than 10% absence than in subjects with less than 10% absence (p = 0.01) (Table 2).

Table 2. The relationship between the average number of decayed, missing, and filled teeth in subjects and the number of appointments not attended during treatment

	No missed appointmnents (43 patients)	Less than 10% of appointments missed (57 patients)	10% or more appointments missed (72 patients)	P value*
D (mean ± SD)	3.67±2.44	2.4±2.53	2.99±2.21	0.33
M (mean + SD)	0.49±0.94	0.44±0.84	0.88±1.16	0.014
F (mean + SD)	4.53±3.8	3.16±2.4	3.93±3.4	0.33
*kruskal-wallis test				

In this study, no significant association was found between oral health literacy score, DMFT index and percentage of appointments not attended.

In addition, there was no statistically significant difference between the mean score of oral health literacy, DMFT index and percentage of missed appointments by gender among the studied patients (P > 0.05). The mean score of oral health literacy was significantly higher in university-educated individuals than in others (P = 0.022), but the DMFT index and percentage of missed appointments did not differ significantly between groups (P > 0.05).

4. Discussion

Health literacy is a concept that describes the ability of patients to understand the information and resources provided by physicians and health professionals. It encompasses a range of simple to complex skills that enable individuals to participate in treatment decisions and protect themselves, their families, and their communities from disease. As indicated by the results, the mean score of oral health literacy of patients referred to the orthodontic clinic at Birjand University of Medical Sciences was 12 3.2, indicating that the patients have an adequate level of oral health literacy.

In the study of Seyed Moalemi et al (12) in Isfahan, the mean score of oral health literacy was 11.1 and in the study of Naghibi et al (13), the mean score of oral health literacy of Tehran citizens was 10.5, i.e. compared to the present study, they have a lower level of oral health literacy.

The reason for this may be the lower level of education, the presence of stronger class differences, and the possible different social class of the patients seeking orthodontic treatment compared to the general dental patients in the studies of Tehran and Isfahan (12, 13). Sabbah W et al (14) attributed this to the higher education of the patients referred to the Toronto clinic.

In the present study, the oral health literacy score was significantly higher in those with higher education than others (P = 0.022).

These results are consistent with the studies of Tehrani Bani hashemi et al (15) , Nekooyi Moghaddam et al (16) , Lee et al (17) , Fang et al (18) , Sun et al (19) , McCleary et al (20) Bains SS et al (21) and Basir L et al (22). People with higher education have higher health literacy, understand health information and instructions better and use them more accurately. However, patients with lower levels of education have lower health literacy and have difficulty in understanding and applying health instructions, using and administering medications, and understanding medical prescriptions; therefore, they require special training and attention, subsequently, it seems necessary to mention that during clinical visits, dentists need to adjust their relationship to the patient's level of health literacy.

Unattended appointments at an orthodontic clinic can disrupt the treatment process, as the success of orthodontic treatment is highly dependent on the patient's cooperation in attending appointments and following the orthodontist's instructions.

In the present study, there was no significant association between health literacy scores and missed appointments, while low oral health literacy was reported as a strong factor for absenteeism in a study by Holtzman et al (4) and a study by Baskaradoss JK et al (23).

The reason for this difference may be the sufficient educational level of most of the participants in the present study.

In the present study, there was no significant association between missed appointments and gender, which is in line with the results of a study conducted by Bos et al. in 2005 (24). However, these results contradict the findings of Can s et al. study (25), which found that women were more likely to miss their dental appointments than men. This could be due to the fact that women have concerns about choosing a good dental clinic and dentist, and that a higher percentage of women are housewives and cannot find someone to take care of their children during a dental appointment.

We did not find a significant relationship between oral health literacy scores and the DMFT index. This is consistent with the findings of Sabbah et al. (14) in 2013, who found a non-significant relationship between the DMFT index and oral health literacy, although there was a significant relationship between the components of the DMFT and oral health literacy, as subjects with inadequate oral health literacy had more decayed teeth and fewer filled teeth. In addition, in another study (26), participants with good oral health literacy had fewer missing teeth than participants with inadequate oral health literacy (P < 0.01), and there was a significant association between behavioral characteristics and oral health status with the level of oral health literacy (P < 0.05). The DMFT index in the present study was lower (7.6) than that reported by Sabbah (14.6) (14) and MS Tremblay (10.67) (27). The reason might be due to adequate oral health literacy and higher

educational level of the participants in the present study as compared to similar studies.

In the present study, missing treatment appointments was not a factor that affected the DMFT index, whereas in the study by N. J. Wang et al. (28), children who had a history of frequent missed appointments had more enamel disruption, more caries experience, more caries activity, and required more time to complete their dental treatment compared to other children.

Conclusion

In general, this study showed that the orthodontic patients who participated in this study had adequate oral health literacy. Oral health literacy was not influenced by gender, absenteeism, and DMFT, but education was a factor that influenced the level of oral health literacy. DMFT index was lower in the present study than in similar studies.

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